

# INSTALLATION INSTRUCTIONS

## RSA-1.0

Remote Serial Adaptor

 SpeakerCraft®



## INTRODUCTION

The SpeakerCraft RSA-1.0 Remote Serial Adaptor provides control of RS232 compatible devices from SpeakerCraft MZC-66 and MZC-88 A/V Amplifier/Controllers. It connects to an MZC rear panel Expansion Terminal and is triggered by EZ-Pad Button presses or remote EZ-Code IR commands (when used to control an MZC-66 or 88). The RS232 Commands are programmed into MZC Projects using EZ-Tools Programming Software. RS232 commands are stored in the EZ-Tools Command Library and programmed to keypad buttons using a similar procedure to programming IR commands. New RS232 commands, of up to 100 characters each, can be added to the Library in EZ-Tools via ASCII or HEX data entry.

Up to 16 RSA-1.0s can be used in a single system by setting each RSA to a unique device Address. A data buss can be created to 'daisy chain' the RSAs for ease of installation and connection.

## RSA-1.0 FEATURES

1. **RS232 DATA I/O** - DB9M terminal connects to the device being controlled via RS232 using a DB9 cable.
2. **ADDRESS SWITCH** - 16 position rotary switch, sets device address allowing up to 16 RSAs to be used in a single system.
3. **12VDC POWER JACK** - 2.1mm coaxial jack connects to a SpeakerCraft PS-1.0 Power Supply for power.
4. **PROGRAMMING SWITCH** - Two-position switch gets set to ON position for updating the firmware from EZ-Tools.
5. **IR HI/LO SWITCH** - Two-position switch sets the IR IN level. Set to HI when connected to a high IR output device, (12V; P-P) set to LO when connected to a low output device, (5V; P-P).
6. **POWER LED** - Red LED illuminates when RSA has DC power and completes its internal initialization.
7. **CONTROL PORT** - 4-circuit, 3.5mm mini-jack connects to PC running EZ-Tools for RSA programming and firmware updates.
8. **EXPANSION LOOP** - RJ45 jack primarily used to connect to the **Expansion Port** on additional RSA-1.0(s) when multiple RSA-1.0s are used to control multiple RS232 devices in a single system. The **Expansion Loop** and **Expansion Port** jacks are parallel. Up to 16 RSA-1.0s can be used in a single system.
9. **EXPANSION PORT** - RJ45 jack primarily used to connect to the **Expansion Port** or **Loop** on a SpeakerCraft MZC-66 or MZC-88. This connection receives control data from the MZC via RS485. RS232 commands are configured in the MZC using EZ-Tools.
10. **IR IN** - 3.5mm mini jack receives SpeakerCraft EZ-Code IR commands from an IR control system. These commands are converted to RS232 commands as associated in EZ-Tools. This jack only functions when the special IR to RS232 Control Interfacing Firmware has been programmed into the RSA.
11. **ACTIVITY INDICATOR** - Green LED flashes to indicate activation of internal command data.

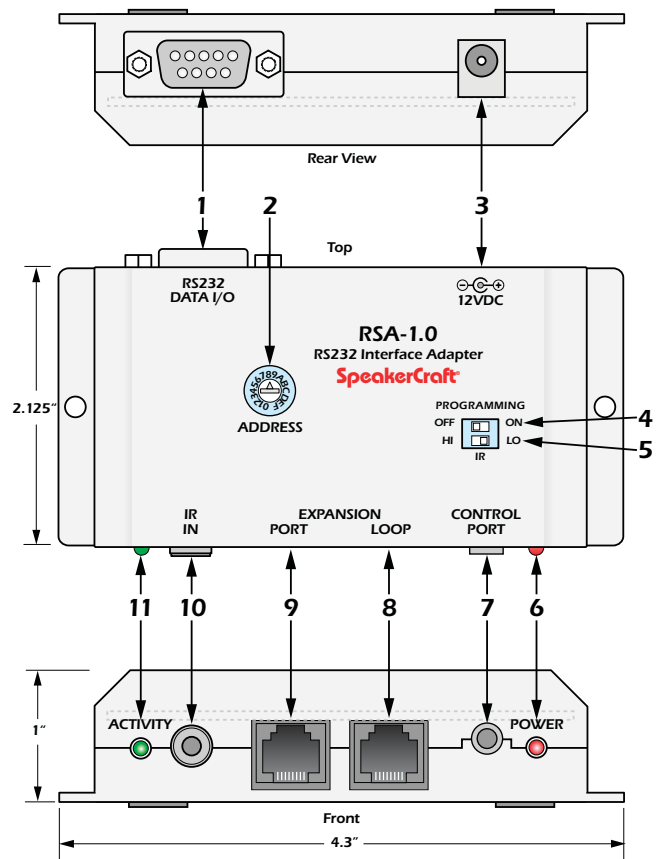


Figure 1  
RSA-1.0 Features

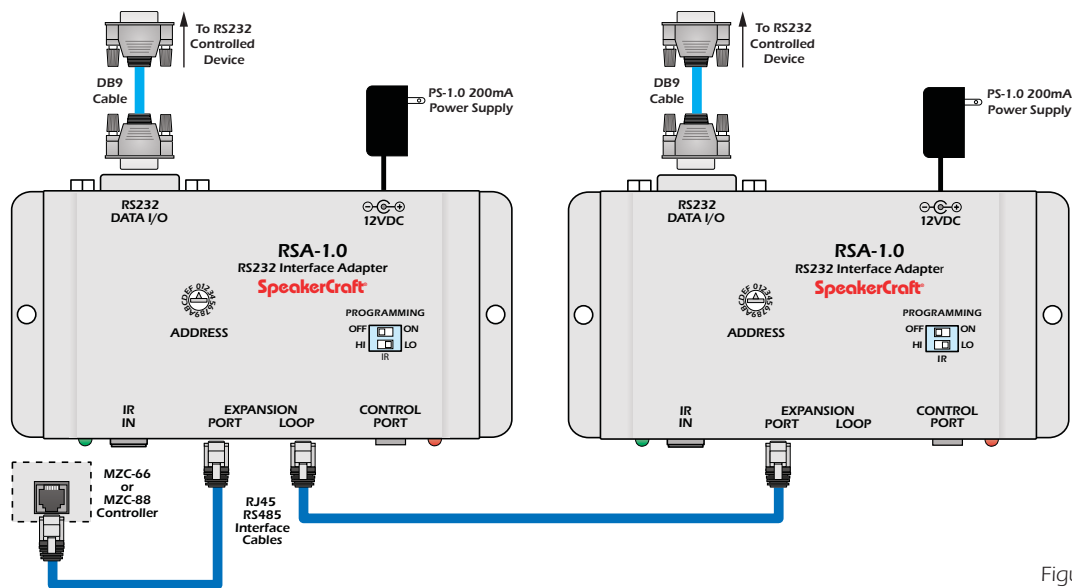


Figure 2  
Typical RSA-1.0 Application

## INSTALLATION

When all system components are installed in a central equipment rack or closet, the RSA-1.0(s) should be mounted in a place that provides easy access should reprogramming or service be necessary. The plastic flange extensions and mounting holes allow vertical installation on a cabinet side or equipment room wall.

The CAT-5 connections between an MZC-66/88 and a RSA-1.0 are RS485 protocol, so the runs can be fairly long. Typical RS-485 TX/RX, (transmit/receive) allows up to 1000 feet between devices. When using multiple RSAs, the TOTAL cable length from the MZC to the LAST RSA should not exceed this specification.

The DB9 connections between the RSA-1.0(s) and the device(s) being controlled are RS232 protocol which has a limitation of about 50 feet between devices. For best performance try to install the RSA-1.0(s) as close to the device(s) being controlled as possible.

When using multiple RSAs, it is recommended that each be labeled with the device brand, type (DVD player, Server, etc) and model number to assist in servicing and troubleshooting the system when necessary.

## CONNECTIONS

**NOTE:** The RSA-1.0 has a **DTE** pinout. If the device being controlled has a **DCE** pinout, a pass-through cable, (pin to pin), should be used. If the device being controlled also has a **DTE** pinout, then a Null Modem Cable should be used.

1. Using a properly terminated CAT-5 cable (pass-through, pin to pin configuration) connect the **Expansion Loop** on a SpeakerCraft MZC-66/88 to the **Expansion Port** on a RSA-1.0. **(Refer to Figure 2)**
2. Using a properly configured DB9 cable to connect the **RS 232 DATA I/O Port** on the RSA-1.0 to an appropriate RS 232 Data I/O Port on the device being controlled. **(Refer to Figure 2)**
3. If using multiple RSA-1.0's using a properly terminated CAT-5 cable (pass-through, pin to pin configuration) connect the **Expansion Loop** on a RSA-1.0 to the Expansion Port on the next RSA-1.0. **(Refer to Figure 2)**
4. Using properly configured DB9 cables (pass-through, pin to pin configuration) connect the **RS 232 DATA I/O Ports** on the RSA-1.0's to the appropriate RS 232 Data I/O Ports on the devices being controlled. **(Refer to Figure 2)**
5. When all other connections have been made and the system is ready for programming/operation, connect a SpeakerCraft **PSA-1.0 12VDC 200mA Power Supply** to the **12VDC Power Jack** on each RSA-1.0. **(Refer to Figure 2)**

## CONFIGURATION

Configuring a single RSA-1.0 application is simple. Set the **Address Switch** to '0'. (Be sure to select Address '0' when **Adding An Expansion Device** in EZ-Tools Setup.)

Configuring multiple RSA-1.0s is similar in a way to routed infrared. With routed IR, when a button is pressed on a keypad or remote, to control for example a specific Satellite Receiver in a system with multiple Satellite Receivers, the IR command is routed by the Control System to the specific IR output for that Satellite Receiver, allowing selective control of multiple same-brand, same-model devices. The same is true when using multiple RSA-1.0s. When a button is pressed on a keypad or remote (specifically programmed to control a MZC-66/88) the Control System (MZC-66/88) will output a control command via the Expansion Loop that will 'look' for a specific RSA Address. When an RSA with the proper Address is located, that RSA will interpret the incoming control command and output the appropriate RS232 command to the device being controlled. All other RSA's on the Expansion Loop Bus, set to a different Address will ignore the command. This allows selective RS232 control of multiple same-brand, same-model devices or control of a variety of devices from different manufacturers.

1. When using one RSA-1.0, set the **Address Switch** to '0'.
2. When using multiple RSA-1.0s set the Address Switch on each RSA-1.0 to a different address. Up to 16 different addresses can be configured.

When using multiple RSA-1.0s keep a written record of each RSA's Address Switch setting and the device it is intended to control. This information will be critical during programming.

## PROGRAMMING

The initial release of the RSA-1.0 will only allow programming and interfacing with SpeakerCraft MZC-66/88 Multi-Zone Controllers. The following Programming Instructions detail the steps required to program a RSA-1.0 for use with MZC-66/88. Please visit the SpeakerCraft web site, [www.speakercraft.com](http://www.speakercraft.com) for updates on additional uses of this product, including IR to RS232 control interfacing.

Programming an RSA-1.0 for use in a MZC System is similar to the normal programming procedure for associating System commands in Events Setup or configuring Source Commands in Zone Setup. For Events Setup, the RSA RS232 commands can be associated with a System Turning ON, System Turning OFF, Zone Turning ON, Zone Turning OFF or Doorbell Event in the same way that MZC Commands or Source IR commands are programmed. In Zone Setup, RSA RS232 commands can be configured to be output from the MZC when initiated by a keypad button press as a single command or part of a macro. Programming an RSA-1.0 does require that RS232 commands have been stored in the CMD Library by Brand, Component and Model. See Section: Creating RS232 Commands for additional information. To program a MZC Project using an RSA-1.0 with existing RS232 commands:

1. Open an existing or create a new EZ-Tools Project for MZC-66/88.
2. Left click the Project Content Tab so **MZC-66/88 Stand-alone** is highlighted. (In expanded systems with multiple MZCs, **MZC-66/88 Master** should be highlighted.)
3. Right Click **MZC Standalone/Master**. Highlight Add Expansion Device in the pop-up window.
4. Left Click RSA-1.0 in the second pop-up window. (Refer to Figure 3) The Expansion Device Setup Window will appear. **NOTE:** An RSA-1.0 can also be added by right clicking the Expansion Devices icon at the bottom of the Project Content Window. Right click Expansion Devices, roll the mouse over the pop-up and left click RSA-1.0.

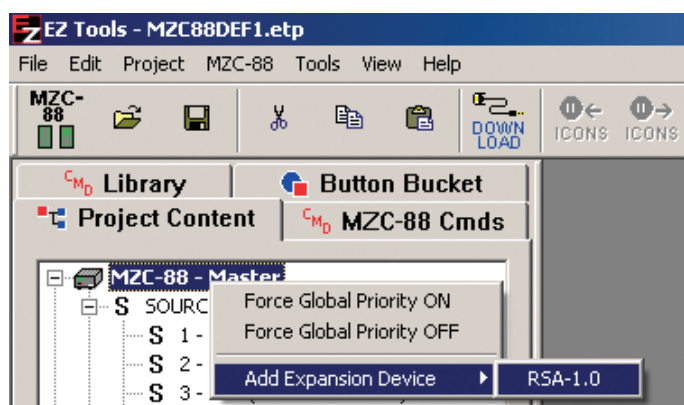


Figure 3  
Adding an RSA-1.0 to a MZC Project

5. Select an Address from the Address pull-down. (Refer to Figure 4) If using only one RSA-1.0 use the default of '0'. If using multiple RSA-1.0s, set each to a different address.
6. Left click OK in the Expansion Device Setup Window to set the Address. An RSA-1.0 icon will appear at the bottom of the Project Content Window under Expansion Devices as RSA-1.0-0 (assuming Address '0' was selected). If multiple RSA-1.0s are added, they will all appear and each will indicate its Address, RSA-1.0-0; RSA-1.0-1; RSA-1.0-2; etc. as shown in Figure 5.
7. In the Project Content Window, left click the EZ-Pad in the Zone that is going to be programmed to send RS232 commands from the RSA-1.0. (Zone 1, EZ-Pad-0 as shown in Figure 6.) The EZ-Pad selected will appear on screen.
8. Left click the button on the EZ-Pad that is going to be programmed to send RS232 commands via the RSA-1.0. The button will highlight in blue, and the Button Properties Window will appear, if not already on screen.
9. In the Project Content Window, left click the RSA-1.0 that is going to control the device selected on the EZ-Pad in Step 8 above, (in this case AUX, which is an Escient FireBall). The word **SELECTED** will appear after the RSA-1.0 icon to indicate that the RSA has been selected for programming. If multiple RSAs are being used in a system, this will indicate which RSA has been selected.
10. Left click the CMD Library Tab to bring the IR/RS232 Command Library to the front.
11. In the Brands text box, type in the name of the brand to be programmed, in this case Escient. (The pull-down can also be used as well as typing in 'E' and scrolling to Escient from the beginning of the 'Es' using the arrow down key.)
12. Double left click the type of component being controlled, DVD player, CD changer, etc. or in this case, Music Server. If a single model is available under the component selected, the sub-directory will open a list of commands. If multiple model numbers are available, double left click the model number for the device being controlled to open the command list.
13. Scroll through the list to find the RS232 Commands. RS232 Commands are 'prefixed' with a blue '1010'. If no RS232 commands are available from the Command Library, see section: Creating RS232 Commands.
14. Double left click the desired RS232 command. The command will appear in the Button Properties Window. (Refer to Figure 8) If there are commands already associated with the button being programmed, the RS232 command will appear at the bottom of the list. The command

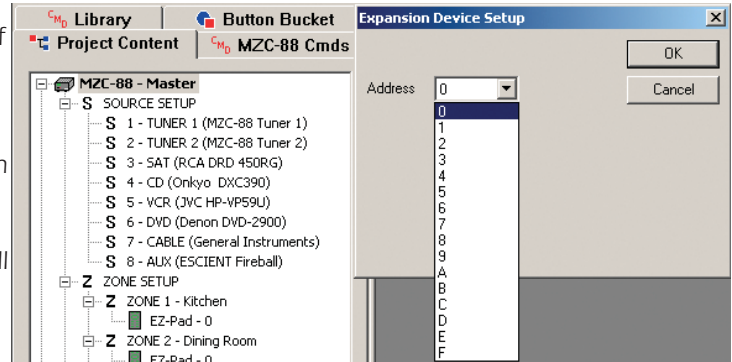


Figure 4  
Selecting an RSA-1.0 Address

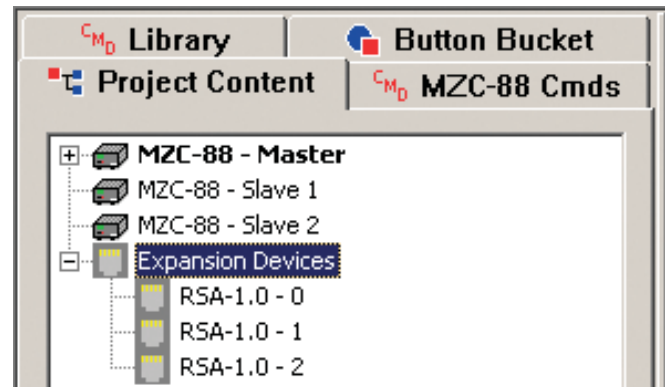


Figure 5  
Multiple RSA-1.0 Addresses

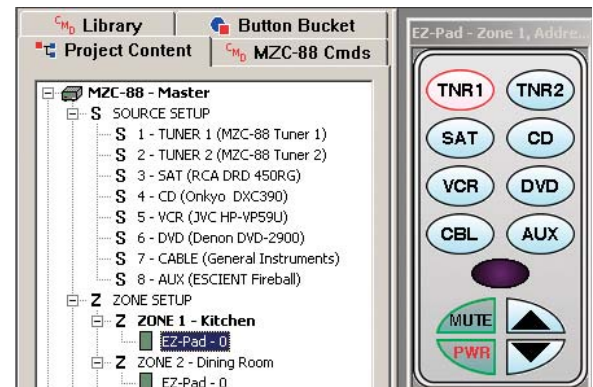


Figure 6  
Select EZ-Pad

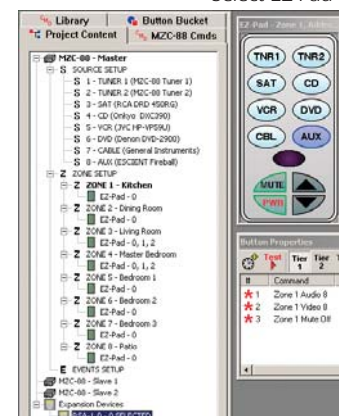


Figure 7  
EZ-Pad Button and RSA-1.0 Selection



can be moved up in the list by dragging and dropping the command to a different position. Be sure moving commands in the list does not adversely affect existing functionality.

15. The RS232 command line in the Button Properties Window will show the blue '1010' icon to indicate an RS232 command, the function, brand, component and 'RSA-1.0 Add. 0 RS232' indicating that the command has been properly associated with the RSA-1.0. If an EZ-Pad button press does not properly execute control functions, this is a good place to look in troubleshooting to confirm Zone/EZ-Pad/Button/RSA-1.0/RS232 command configuration. See section: Troubleshooting for additional information.
16. Repeat steps 1-6 above to add RSA-1.0s.
17. Repeat steps 7-14 to program EZ-Pads with RS232 commands for RSA-1.0s.

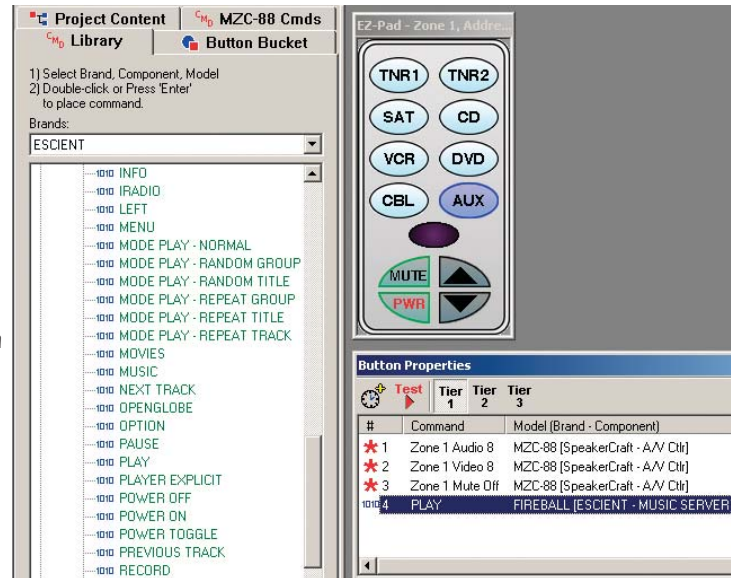


Figure 8  
Programmed RSA-1.0 RS232 Command

## ADDING NEW RS232 COMMANDS TO THE COMMAND LIBRARY

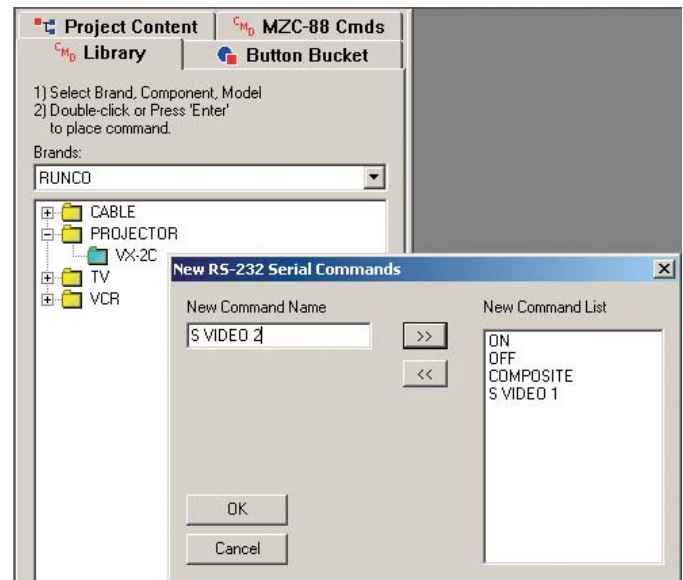
New RS232 Commands can be quickly added to the EZ-Tools CMD Library. ASCII text strings of up to 100 characters can be added when either the ASCII or HEX code is known. Additionally, Baud Rate, Data Bits, Parity, Stop Bits, Character Delay, Response Length and Response Timeout can be set to assure proper performance of these control commands. ASCII, HEX and other code parameters can typically be found in product manuals or on manufacturers web sites. It may be necessary on occasion to contact a particular manufacturer's tech support to get this information.

In some cases, the EZ-Tools CMD Library will already have IR codes or possibly some RS232 Commands for a particular Brand, Component and Model, and all that need be done is to add a couple of RS232 commands. In other cases, the Brand, Component and Model for which RS232 commands are required may not be in the CMD Library. Start with the appropriate step for the specific command(s) being added.

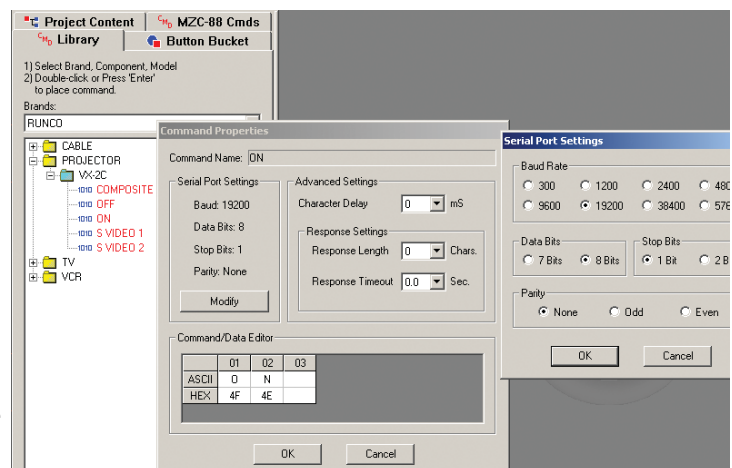
1. With EZ-Tools running, open the project for which the new RS232 Commands are required. (If not ready to program a specific project, open any EZ-Tools project.)
2. Left click the **CMD Library Tab**.
3. If the Brand name does not already exist, right click within the Brands space and left click **"New Brand"**. Type in the new brand name and click **OK**.
4. Right click the empty space below the brand name and left click **"New Component"**. Type in the new component name (i.e. **Projector**) and click **OK**.
5. Right click the new (Projector) folder and left click **"New Model"**. Type in the new model name (the model # of the component or it's remote, i.e., **VX-2c**) and click **OK**.
6. Right click the new model # folder (i.e., VX-2c). Go to **"New Commands"** and left click **"RS232 Serial Commands"**. Type in command name (i.e., **ON**) and left click right arrows (>>) to put the name in the New Command List. Type in a complete list of command names (i.e., ON, OFF, COMPOSITE, S VIDEO 1, S VIDEO 2, etc.) as needed. (Refer to **Figure 9**)
7. When all new command names have been added to the New Command List, click **OK**.
8. The **Command Properties Window** will open automatically, with the first new command already placed in the Command Name field. (i.e. ON) (Refer to **Figure 10**)

9. Left click **Modify** in the **Com Port Settings** box, to make any changes necessary to: **Baud Rate**, **Data Bits**, **Parity** and **Stop bits**, per the manufacturer's protocol. The **Serial Port Settings** pop-up will appear. Make necessary changes and click **OK**. (Refer to **Figure 10**)
10. In the **Command/Data Editor** box, left click either the **ASCII** or **HEX** field under "01" depending upon which data, ASCII or HEX will be used to create the new command. Type in the command string, one character per box, up to 100 characters.
11. In the **Advanced Settings** box select a **Character Delay**, from 0 (no delay) to 50 mS (milliseconds) if needed, to be inserted between characters when command strings are being sent.
12. In the **Response Settings** box, select the appropriate **Response Length** from 0 to 100 Characters to confirm that the command string has been properly sent, received and executed.
13. In the **Response Settings** box, select the appropriate **Response Timeout** from 0.0 to 10.0 seconds. This will determine the amount of time the RS232I/O Port will stay 'open' waiting for a response from the controlled device.
14. When all **Command Properties** for the specific command being edited have been made, click **OK**. The command will be added to the **CMD Library** and will be designated with a "1010" icon. The next **New Command** will automatically come up in the **Command Properties** Window. Typically, a manufacturer will use the same settings for baud, Data Bits, etc., so all that need be done is to type in the **ASCII** or **HEX** code for the individual commands. When all **New Commands** have been formatted, the **Command Properties** Window will close and all commands will be listed in the appropriate **CMD Library** List. (Refer to **Figure 11**)

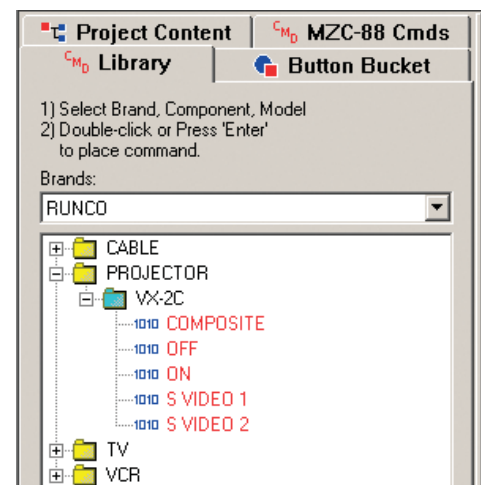
Once RS232 Commands have been added to the **CMD Library**, they are available for use in any **EZ-Tools** project when programming RS232 codes is required.



**Figure 9**  
Adding New RS232 Command Names



**Figure 10**  
Entering RS232 Command Properties



**Figure 11**  
New RS232 Commands in Command Library

## SPECIFICATIONS

Dimensions: 4.3"L x 2.125"W x 1"H

Power Requirement: 12V DC; 200mA (SpeakerCraft PS-1.0 Power Supply)

### Connectors

Power: 2.1mm coaxial jack  
IR In: 3.5mm mini jack  
Network: 2 x RJ45  
RS232: DB9M  
Control Port: 3.5mm mini jack (4-circuit)

### RS232 Parameters

Baud Rate: 300, 1200, 2400, 4800, 9600, 19200, 38400, 57600 Selectable  
Data Bits: 7, 8 Selectable  
Stop Bits: 1, 2 Selectable  
Parity: None, Odd, Even Selectable  
Command String: 100 Characters Max  
Character Delay: 0-50mS  
Response String: 0-100 Characters  
Response Timeout: 0.0-10.0 Seconds

### Transmission Length

Network (RS485): 1000' Max  
RS232 Data I/O: 50' Max



## LIMITED 2-YEAR WARRANTY

SpeakerCraft Inc. warrants to the original retail purchaser **only** that this SpeakerCraft product will be free from defects in materials and workmanship for a period of two years, provided the product was purchased from a SpeakerCraft Authorized Dealer.

Defective products must be shipped, together with proof of purchase, prepaid insured to the SpeakerCraft Authorized Dealer from whom they were purchased, or to the SpeakerCraft factory at the address listed on this installation instruction manual. Freight collect shipments will be refused. It is preferable to ship this product in the original shipping container to lessen the chance of transit damage. In any case, the risk or loss or damage in transit is to be borne by the purchaser. If, upon examination at the Factory or SpeakerCraft Authorized Dealer, it is determined that the unit was defective in materials or workmanship at any time during this warranty period, SpeakerCraft or the SpeakerCraft Authorized Dealer will, at its option, repair or replace this product at no additional charge, except as set forth below. If this model is no longer available and cannot be repaired effectively, SpeakerCraft, at its sole option, may replace the unit with a current model of equal or greater value. In some cases where a new model is substituted, a modification to the mounting surface may be required. If mounting surface modification is required, SpeakerCraft assumes no responsibility or liability for such modification. All replaced parts and product become the property of SpeakerCraft Inc. Products replaced or repaired under this Warranty will be returned to the original retail purchaser, within a reasonable time, freight prepaid.

This Warranty does not include service or parts to repair damage caused by accident, disaster, misuse, abuse, negligence, inadequate packing or shipping procedures, commercial use, voltage inputs in excess of the rated maximum of the unit, or service, repair or modification of the product which has not been authorized or approved by SpeakerCraft. This Warranty also excludes normal cosmetic deterioration caused by environmental conditions. This Warranty will be void if the Serial Number on the product has been removed, tampered with or defaced.

This Warranty is in lieu of all other expressed warranties. If the product is defective in materials or workmanship as warranted above, the purchaser's sole remedy shall be repair or replacement as provided above. In no event will SpeakerCraft be liable for any incidental or consequential damages arising out of the use or inability to use the product, even if SpeakerCraft Inc. or a SpeakerCraft Inc. Authorized Dealer has been advised of the possibility of such damages, or for any claim by any other party. Some states do not allow the exclusion or limitation of consequential damages, so the above limitation and exclusion may not apply.

All implied warranties on the product are limited to the duration of this expressed Warranty. Some states do not allow limitation on the length of an implied warranty. If the original retail purchaser resides in such a state, this limitation does not apply.



SpeakerCraft offers a variety of accessories to make your installation of this and other SpeakerCraft products easy, economical, and professional. Contact your authorized SpeakerCraft Dealer for more information.

For technical inquires, please call 1-800-448-0976 or e-mail us at [techsupport@speakercraft.com](mailto:techsupport@speakercraft.com). We are available to assist you every weekday, except holidays, between the hours of 7:00 a.m. and 5:00 p.m. PST.

